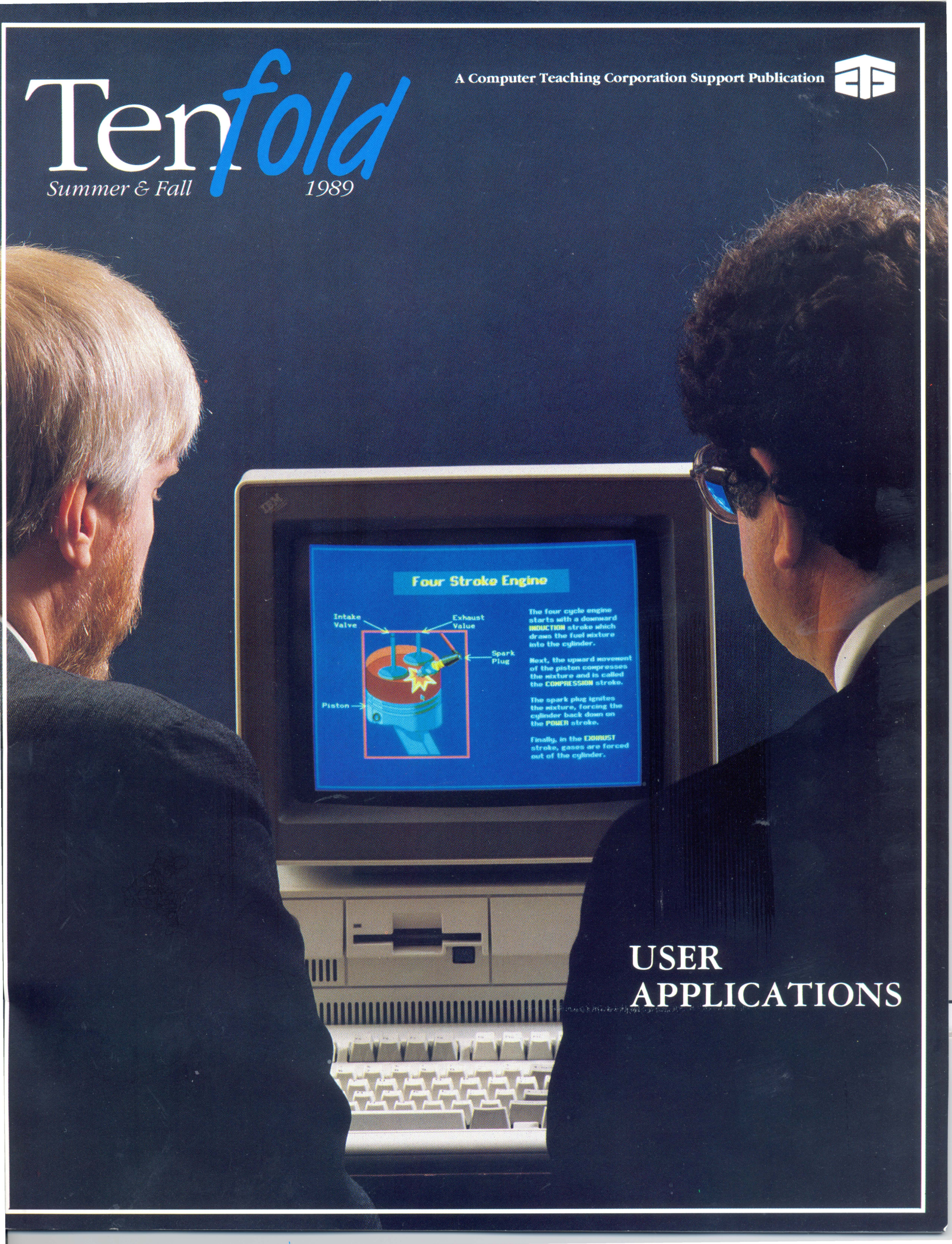
Tenfold

Summer & Fall 1989

A Computer Teaching Corporation Support Publication


Four Stroke Engine
Intake Valve
Exhaust Value
Spark Plug
Piston
The four cycle engine starts with a downward INDUCTION stroke which draws the fuel mixture into the cylinder.
Next, the upward movement of the piston compresses the mixture and is called the COMPRESSION stroke.
The spark plug ignites the mixture, forcing the cylinder back down on the POWER stroke.
Finally, in the EXHAUST stroke, gases are forced out of the cylinder.

USER APPLICATIONS

Tenfold

Summer & Fall 1989

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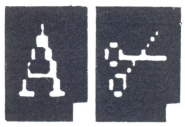

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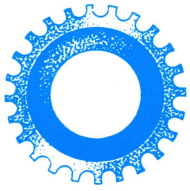

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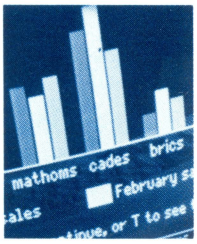

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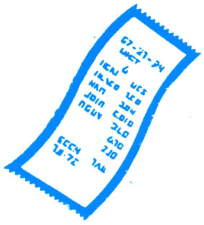

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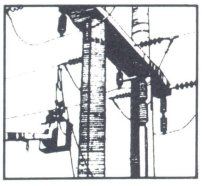

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Dear Readers: We've Got Users Producing Courseware . . . and Lots of It!

Paul Tenczar
CTC President

As we travel the world attending conferences, exhibiting at trade shows, and visiting customers, we frequently encounter questions such as:

What makes TenCORE products different from the others?

Can your product do this . . . ?

At first, we would answer by describing how the system works and listing its many features. However, we have found that there is a better answer—one that is both tangible and unbiased. That answer is to talk about TenCORE users and explain what they have done with our products. We believe that one of the main differences between TenCORE and other authoring systems is that TenCORE users are REALLY making computer-based training (CBT) work. This is exactly what this first issue of the newsletter, *Tenfold,* is all about–TenCORE users sharing their success in implementing high quality courseware . . . and lots of it.

In this first issue of *Tenfold* we are highlighting the diversity of TenCORE applications around the world. The majority of articles were written by users and represent their unique perspective on CBT and individualized learning. These *Tenfold* contributors are a small sampling of the more than 1000 organizations using TenCORE. Shared among the diversity of these users is a common commitment to high quality technology-based instruction. They know that there is no miracle product that will substitute for the needed hard work to produce CBT–and TenCORE is a worthy helper. It is clear the effectiveness of TenCORE courseware is due to the synergy between good authors and a competent system.

With today's increasing focus on emerging technology, it is refreshing to see TenCORE users demonstrate their ability to make full use of existing technology. The courseware described in *Tenfold* includes everything from text-only lessons to high resolution, color graphic simulations with interactive video. Delivery media range from floppy diskettes to the latest in CD-ROM technology. The important message is that with TenCORE ***you*** are able to choose the technology which best suits your needs.

We'd like to thank all of the TenCORE users who contributed to this newsletter and welcome other users to submit articles for inclusion in future issues of *Tenfold.*

Best regards,

Paul Tenczar

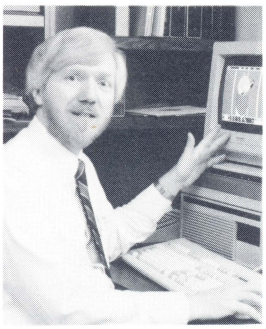
Key members of the CTC programming staff.

Front row: Steve Simpson, Don Appleman, Tom Ahasic

Back row: Norm Fisher, Gary "Nick" Madelung, Dean Franks, Dan Beckman, Mike Betts ▼

The Craftsman's Choice ...

by Jim Glish
CTC Director of Marketing



▲ Jim Glish

By the time this newsletter goes to press, we will be shipping the TenCORE Language Authoring System (LAS), Release 4. This major update includes a number of significant enhancements which make TenCORE courseware development even more efficient.

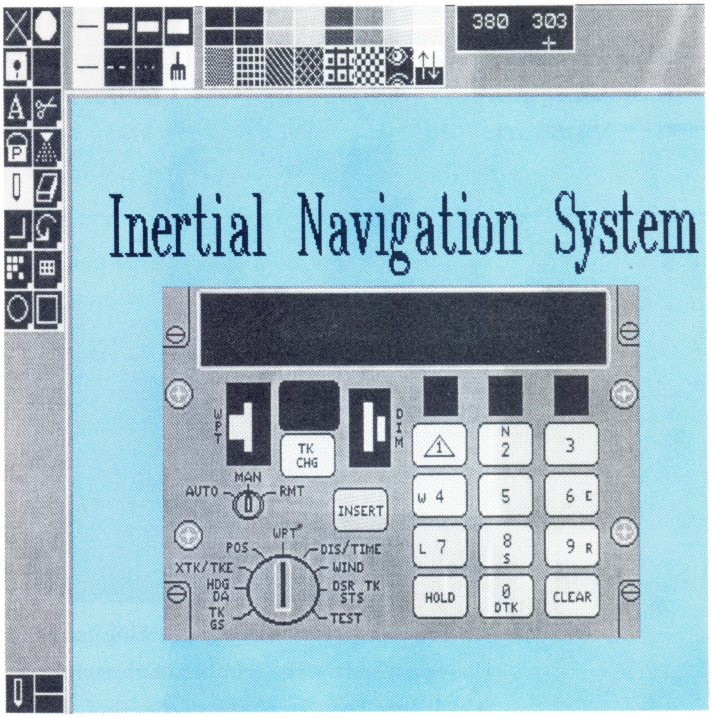
A new full-screen command editor combines pull-down menus and a complete range of text editing features to speed up the creation and editing of TenCORE lessons. Pull-down menus provide functions such as search/replace, copy, save, delete, print, import/export, and others. The editor also includes improved file and unit selection displays.

A complete bit-mapped image editor is now a part of the TenCORE authoring system. It offers features found in popular "paint" packages such as free hand drawing, variable brush sizes, spray can, image resizing, multiple font styles, and palette manipulation. Images can be created with the new built-in editor or imported from PC Paintbrush and Dr. Halo file formats. In addition, images plot faster while requiring 25% less storage space. They may be saved in either compressed or uncompressed form to further increase plotting speed.

Network file sharing in TenCORE LAS Release 4 includes new file and record locking features making it possible to have more than one student share data from a TenCORE network file at the same time. This means student records on a network can be maintained in a common group file to simplify instructor access to student scores and completion status.

TenCORE's object oriented graphic editor now offers increased flexibility in editing text, laying out graphics, defining touch areas, and controlling interactive video. The editor allows mouse or keyboard control and includes additional prompting and help pages.

New TenCORE image editor ▼



Improvements have also been made in areas such as answer judging, indented command structures, text display and editing, window management, keyboard and mouse monitoring, printer control, access to external programs, and much more.

Although Release 4 includes significant enhancements to the language and its performance, every effort has been made to ensure compatibility with previous TenCORE releases. For example, Release 3 binaries will run with the new student executor making it possible to combine newly created lessons with your existing courseware. All in all, this latest release reflects our commitment to maintain TenCORE as one of the world's most powerful and productive courseware authoring tools.

DEALER FOCUS

The Age of Reason?

by George Macaulay
Director and Co-Founder
Systems Interactive Ltd.
United Kingdom

I wonder if those of you familiar with the development of computer-based training in the United Kingdom or elsewhere, would accept the premise that we have moved into

George Macaulay ►

the "Age of Reason". A contributing factor to this hypothesis is the number of obstacles which have been overcome in the last five or so years. See if you agree with the following:

- Trainers generally accept the fidelity of the medium as an effective training method.
- Trainees are more "liberal" in their acceptance of technology as part of working life.
- Organizations are more conscious of the benefits of CBT, including the cost argument.
- There are a host of successful applications in the key sectors of business, government, industry and education.
- Computer hardware and software is more accessible and increasingly less expensive.
- Development of hardware standards eg., high resolution, color graphics, video overlay and digitized sound, have contributed to the quality of the programs.
- CBT vendors have evolved into viable service businesses to assist organizations.
- Authoring software has become a usable tool for the trainer.

There are doubtless more observations which you could add to this list. The question simply is, "What does it mean?" In a nutshell, CBT has "taken off" and is delivering its early promises. In the UK alone Systems Interactive Ltd. (SI) supports some 200 TenCORE users representing manufacturing, government and military, technology, financial, aviation, utilities and retail sectors. At a recent user group meeting in London, some 150 delegates exchanged information and ideas about courseware, authoring and the implementation process.

This edition of *Tenfold* will go to more than 1000 users worldwide and will contribute to the much needed exchange of ideas and information between authors.

As TenCORE becomes the "de facto" standard for serious authors, this base of experience and information will be of tremendous value to this unique group of professionals. If we have entered the "Age of Reason", the collective wisdom of the TenCORE authoring community will be its guiding light and a source of inspiration to those following in it footsteps.

Systems Interactive Ltd. is among the world's leading TenCORE dealers and provides a full range of service for courseware design, development and project implementation.

APPLICATION HIGHLIGHTS

Police and Correctional Officer Training Expands to Computers

For more than a decade, the University of Illinois Police Training Institute (PTI) in Champaign has pioneered the development of CBT programs for law enforcement. In fact, the U.S. Senate passed a resolution crediting PTI as the recognized leader of police training in the field of CBT.

One of the innovators involved in this effort, Dr. Roy O. Walker, PTI associate professor, has converted 13 CBT courses to microcomputers using TenCORE.

Originally, 42 computer-based lessons were developed by PTI faculty using the PLATO system. However, PLATO was only available on mainframe computers, which usually placed it beyond the financial limits of most state and municipal police departments and training centers.

Walker said, "In 1985 IBM PCs and TenCORE were selected as the medium of choice for delivering CBT courseware to interested users for in-service, on-the-job training. Currently, CBT courseware is being used by police departments, law enforcement training academies at the state and federal level of government, community colleges and universities."

Walker has been a strong advocate of evaluating and improving law enforcement training since the 1970s. He and fellow PTI associates felt the instructional demands associated with diverse personnel backgrounds, combined with the need to upgrade and evaluate individual skills could be met through CBT.

Currently, CBT courseware is being used by police departments, law enforcement training academies at the state and federal level of government, community colleges and universities.

PTI's lessons cover a range of topics such as, dealing with variant behavior, child abuse, street behavior of police officers, crisis intervention, interrogation, forensic science and corrections. All lessons have been tested in actual PTI academic training situations with more than 18,000 police and correctional officers.

For more information about PTI and available courseware, contact:

Dr. Roy O. Walker
Associate Professor
Police Training Institute
University of Illinois
Room 209
409 E. Chalmers St.
Champaign, IL 61820
USA

◄ Dr. Roy Walker, PTI Instructor, assisted students from the Lake County, Illinois sheriff's department. The class of 38 participated in a basic correctional officer course.

"DO - RE - MI"

Harmonizing Microcomputer Programming with Ear Training

Dr. Fred T. Hofstetter came to the University of Delaware as a music instructor. His first assignment was to teach ear-training to a class of 40 students–a task he now describes as impossible.

"Musicians must have an ear so keen that when they hear music, then can write it down, and when they look at a musical score, they can hear it inside their heads."

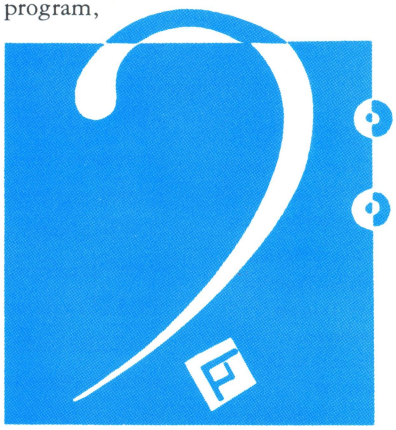
Hofstetter soon noted the lecture class environment was both self-defeating for the students and the instructor.

He said, "Some students are good at melody, while others excel in rhythm. Some are slow learners and need the music to be repeated several times, while bright students become frustrated when they are ready to move on, but the rest of the class is not."

Computing Interest More than a Hobby. Hofstetter also had an interest other than music–computing. He began experimenting with a program to display musical questions on a computer screen, play a musical exercise and ask students to notate it by selecting musical symbols.

He named his program Graded Units for Interactive Dictation Operations, or simply *GUIDO*. Guido d'Arezzo, an eleventh-century monk, originated the "Do-Re-Mi" musical syllables.

IBM PC Increased *GUIDO* Availability. The first *GUIDO* program was developed on a Burroughs 6700 computer and was later transferred to a PLATO system. Reactions to *GUIDO* were outstanding. In order to increase the availability of the program, Hofstetter and his able staff converted to the IBM PC, using TenCORE.



A polyphonic sound card, available from the University of Delaware's Instructional Technology Department, provides a variety of timbres. According to Hofstetter, "the most outstanding aspect of the sound card is that tuning is highly accurate, allowing *GUIDO* ear-training exercises to be played well in tune."

GUIDO also supports the IBM music feature card and MIDI.

***GUIDO's* Tailored Lessons Strengthen the System.** *GUIDO* is composed of several lessons important to ear training. These include intervals, melodies, chord qualities, harmonies, and rhythms.

. . . allows the instructor to alter treatments for different categories of students, from junior high to advanced university music majors.

GUIDO uses a competency-based approach, where students are scored and told how many more correct answers are required before passing to the next level.

Because students vary in ability levels, a table-driven program reads a set of instructional variables, specified by the instructor from a master table. These variables tell the program how to proceed based on the student's performance. This allows the instructor to alter treatments for different categories of students, from junior high to advanced university music majors.

As each unit is completed, a star appears in the menu, with completion time for the *GUIDO* program averaging 120 hours.

Today, the *GUIDO* system is used in many colleges and universities, as well as conservatories such as the St. Thomas Choir College in New York City and the Twents Conservatory of Music in Holland.

For information about the *GUIDO* Ear-Training System, contact:

Customer Service
Department of
Instructional
Technology
Willard Hall
Education Building
University of Delaware
Newark, DE 19716
USA

GUIDO Identifies Talent

One of the accomplishments Hofstetter attributes to the *GUIDO* system was identifying a musical genius.

He explained, "One day a 12 year old high school student asked me if he could use the *GUIDO* system. I arranged for him to have access in the evening and on weekends. A few weeks later, I was amazed to find that he had completed the entire intervals curriculum in just a few hours."

After reviewing the student's performance, through *GUIDO*'s record keeping system, Hofstetter discovered the young student's response time was quicker than any university student's.

"I called his father to find out if the family knew of the son's musical genius, and they did not," he said. "Thanks to the computer, this student is now pursuing a promising career as a concert artist and composer."

Space Transport System Trainees Introduced to Space Shuttle Subsystems

At the Johnson Space Center in Houston, Texas, there is a constant influx of new personnel for the NASA Space Shuttle Mission. Most of these new personnel undergo training in various basic Space Transport System (STS) familiarization and operations courses. TenCORE systems are contributing to this ongoing training process.

Through the programming efforts of Infotec Development, Inc., Colorado Springs, Colorado, and the TenCORE Language Authoring System, interactive video courseware is being implemented to introduce STS trainees to the numerous subsystems integrated in a single Space Shuttle.

The project is in support of NASA under a subcontract issued by the Rockwell Shuttle Operations Company of Houston, Texas. Infotec courseware could form the basis of the STS familiarization course for all STS mission personnel, including the Mission Controllers and the STS mission crew.

Photo courtesy of ► NASA, Lyndon B. Johnson Space Center, Houston, Texas.

FEATURE AUTHORS

DATASTAR EDUCATION SYSTEMS AND SERVICES, AND THE TRAINING GROUP
Providing CBT Software for Health Care Training

by Wayne Osbaldeston
President
DataStar Education Systems and Services

Editor's Note: DataStar Education Systems and Services designs CBT software, which is marketed by The Training Group.

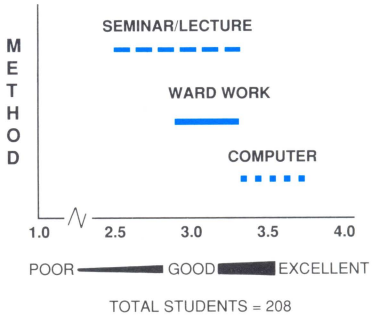
Our strategy is to develop and market advanced CBT software products for specific segments of the health care industry. The segments initially include:

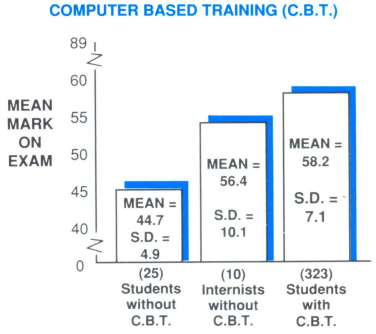
1. Emergency Care
2. Critical Care
3. Cardiac Care

The Need.

As the cost of health care continues to rise, so does the cost of educating our health care professionals. In some cases, especially in the above mentioned health care segments, it is so costly to provide training that it is often done only through a high risk experience or, more often, not at all. In addition, refresher training in these segments of the health care industry is extremely difficult to obtain due to the need for an individual approach.

Table 1 ►





◄ Table 2

The Solution.

The solution is advanced CBT software for education and continuing education of doctors, medical students, nurses, paramedics and other allied health professionals. Our software integrates interactive videodisc sequences into a touch sensitive computer display and through the use of simulation, and other innovative techniques, guides each trainee through the learning experience.

One example of innovation is when the trainee "listens" to lung sounds or heart sounds from simulated patients. The trainee touches the patient's body on the computer screen and listens through an electronic stethoscope "connected to the computer via infrared technology".

Another example of innovation is the use of a module, similar to artificial intelligence, to track and display a patient's vital signs during a "real time" emergency simulation.

The Results.

After evaluating and analyzing the performance of more than 350 medical students we found the following:

1. Students prefer CBT over seminar/lecture and ward work. (Table 1)
2. Training time was reduced significantly from 50 hours to 22 hours.
3. Student performance is improved. (Table 2)

The Development System.

We have experimented with a number of authoring systems and languages, including IWPS, LS1, ICON Author, Quest and TenCORE. None of these systems were able to provide us with all of the capabilities we needed to accomplish the complex tasks involved in the development of our simulations.

However, after using TenCORE for a month we were able to determine that it would meet far more of our requirements than any other system and we were pleased with the support we received from Computer Teaching Corporation. In addition, with TenCORE, our development time was reduced and our products run on a number of different microcomputers.

For more information about health care software, contact:

Wayne Osbaldeston
c/o The Training Group
Suite 202
4220-98 St.
Edmonton, Alberta
Canada T6E 6A1

Allen-Bradley and Industrial Automation Training

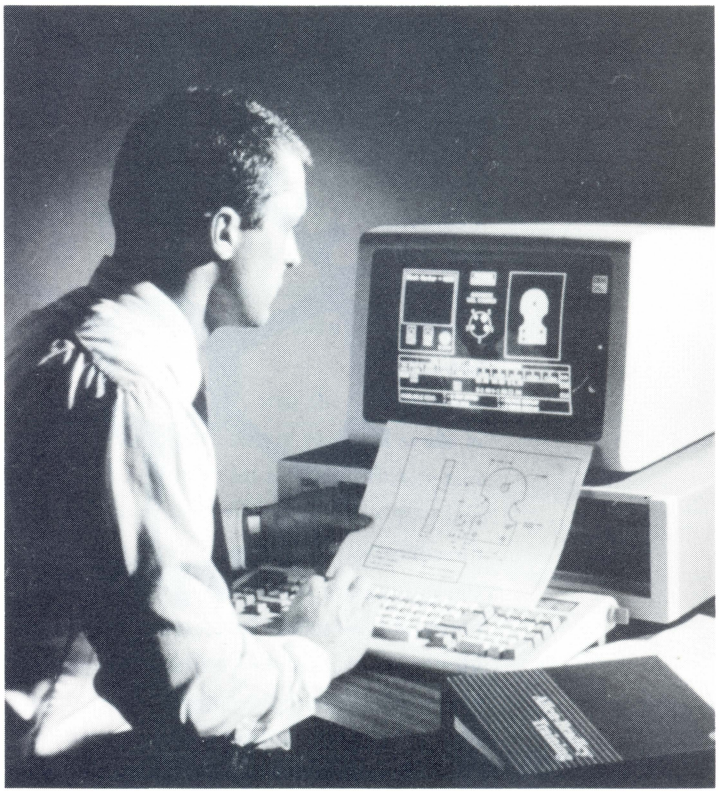
by Gary P. Hofmeister
Technical Support Specialist
Support Division
Allen-Bradley Company

Can computer-based training be used to successfully bridge the gap between insufficiencies in technical literacy and advanced, product-specific skills? As an international corporation providing a wide variety of products for the industrial automation marketplace, the Allen-Bradley Company has a stake in finding the answer to this question. We have witnessed the demands for increasingly effective learning tools grow at a pace which matches, or even surpasses, the dizzying advance of automation technology itself. In the two years that CBT has been an integral part of our curriculum the results have proven to be very effective.

"We came to TenCORE because we needed to create a high level interactive environment . . . We have stayed with TenCORE because it works."

Allen-Bradley uses computer-based training to provide instruction in the fundamentals of the various technologies that our products serve. We decided on CBT because of all its attendant advantages; self-paced, on-site, easy to implement, etc. We came to TenCORE because we needed to create a high-level interactive environment that was deliverable on DOS-compatible micros and independent of expensive on-line programming facilities. We have stayed with TenCORE because it works. With TenCORE we have gained the advantage of a flexible CBT language and have been able to provide single-version compatibility with most graphic standards.

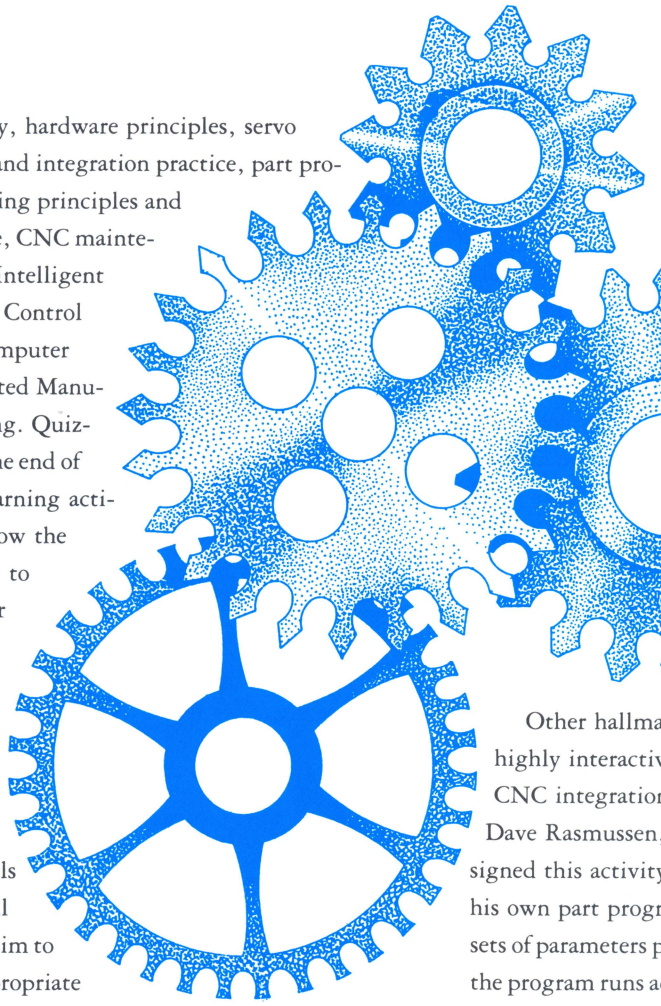
One such course developed by Allen-Bradley was, ***Computerized Numerical Control (CNC)/Intelligent Motion Control (IMC) Fundamentals.*** Intended as a prerequisite to classroom training in specific A-B CNC and IMC products, the course was targeted for CNC technicians and operators. The development period for this course covered approximately one year, divided equally between design specification and implementation.



▲ Dave Rasmussen, seen poring over the part programming simulation screen, was the course developer. Dave designed this activity so that the student writes his own part program, based upon the various sets of parameters provided. When completed, the program runs according to the data entered.

The course design specified a flexible, comprehensive and performance-based format addressing a total of twenty-four learning activities. These were distributed into seven CBT modules totalling 12 TenCORE activities (60% of the course), three 30-minute linear videotapes totalling three activities (10% of the course) and an accompanying textbook for the remaining nine activities (30% of the course). This same multimedia approach to fundamentals training is characteristic of other A-B CBT course offerings as well.

The seven CBT modules in this course include instruction on the history of CNC in



industry, hardware principles, servo theory and integration practice, part programming principles and practice, CNC maintenance, Intelligent Motion Control and Computer Integrated Manufacturing. Quizzes at the end of each learning activity allow the student to monitor his comprehension of the materials and will direct him to the appropriate portion of the course for review if necessary. Mastery level tests are required at the end of each module in order to progress to the next level.

Allen-Bradley's Project Manager Robert Robles and Lead Programmer Michael Wei both brought extensive experience in computer-based training to the implementation phase of the project. A special nod for the eventual success of this course must also be given to the excellent programming staff of Digital Dispatch, Inc., whose help was indispensable.

In developing the design for the router, Mike Wei achieved an interaction between higher and lower level menus which provides easy access to the course contents. Another important consideration in the router design was that it be written as generically as possible so that the lesson contents could be easily removed and replaced with new contents for future courses. Using TenCORE, Mike was able to write routing code that was not intrinsic to the content.

Other hallmarks of the course are the two highly interactive simulation activities for CNC integration and for part programming. Dave Rasmussen, the course developer, designed this activity so that the student writes his own part program, based upon the various sets of parameters provided. When completed, the program runs according to the data entered. For example, if the student enters appropriate commands, the screen will show the workpiece being machined according to specifications. If the student enters incorrect commands, animated graphics will show how these commands can damage the workpiece or cutting tool. The effect of this simulation activity is to closely approximate free-form programming.

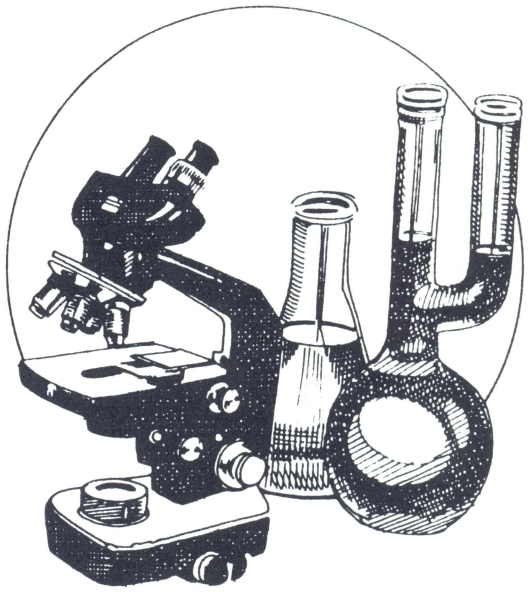
The customers for this course include small job shops, system integrators, our own sales and distribution forces and giants in the manufacturing industry. Several of our customers maintain accurate records of student progress using a variety of measurement techniques. Our follow-up surveys have clearly shown CBT to be fulfilling its promise.

For more information about this course or any other Allen-Bradley course, contact:

Allen-Bradley
Customer Support Division
1201 S. 2nd St.
Milwaukee, WI 53204
USA

The Formula Game

by Dr. John S. Martin
Department of Chemistry
University of Alberta



"Hangman" was a popular word game long before it appeared on the television as "Wheel of Fortune". Because words are put together in systematic ways, it is possible to determine from a partially complete phrase what letters are missing. For example, in this context, you should not have much trouble completing the words "N__th_P_le".

Chemical formulas also are put together in very systematic ways, based on the rules of chemical combination. Even a novice can probably determine what coefficient (number) is represented by the question mark in "$H_?SO_4$". Those who are familiar with chemistry would figure it out thus: sulfate, SO_4, bears a charge of -2, thus SO_4^{2-}; since hydrogens are $+1$, we need two hydrogens to balance.

"... the unknown formula might start out looking like this: $?_??_?$."

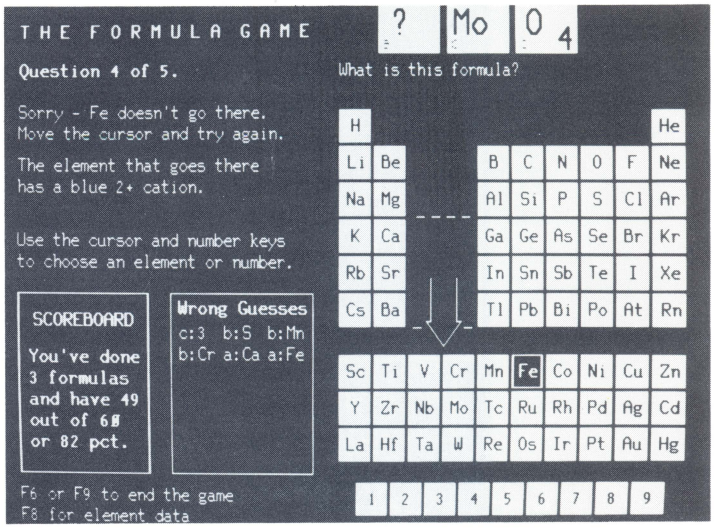
The ***Formula Game*** is a guessing game, where the unknowns are chemical formulas. The computer presents a formula, chosen at random from a large database, as a set of two to four question marks representing the symbols of chemical elements and a similar set representing coefficients (such as the 2, implied 1, and 4 in H_2SO_4). So the unknown formula might start out looking like this: $?_??_?$. The player must figure out what those question marks represent. Each wrong guess costs one point, of twenty for the formula. Five formulas make a game with a maximum possible of 100.

What makes this game interesting is the feedback for wrong guesses. It is designed to guide the player to the formula, by becoming more specific with each additional wrong guess. Even the novice can learn chemistry while playing.

Notice, in Figure 1, that the running score and wrong guesses are recorded so the player will not try them again. In this example the player has deduced that the formula is a molybdate, and the missing element must be a divalent.

The first guess was that element "a" is calcium. The feedback was, "It's a transition element." So the next guess, iron, was taken from the set of 27 transition elements in the block at the bottom of the periodic table. The

Figure 1 ▼


THE FORMULA GAME
? Mo O 4
Question 4 of 5.
What is this formula?
Sorry - Fe doesn't go there.
Move the cursor and try again.
The element that goes there has a blue 2+ cation.
Use the cursor and number keys to choose an element or number.
SCOREBOARD
You've done 3 formulas and have 49 out of 68 or 82 pct.
Wrong Guesses
c:3 b:S b:Mn
b:Cr a:Ca a:Fe
F6 or F9 to end the game
F8 for element data
H He
Li Be B C N O F Ne
Na Mg Al Si P S Cl Ar
K Ca Ga Ge As Se Br Kr
Rb Sr In Sn Sb Te I Xe
Cs Ba Tl Pb Bi Po At Rn
Sc Ti V Cr Mn Fe Co Ni Cu Zn
Y Zr Nb Mo Tc Ru Rh Pd Ag Cd
La Hf Ta W Re Os Ir Pt Au Hg
1 2 3 4 5 6 7 8 9

The *Formula Game* is published by:

Falcon Software
Box 200
Wentworth, NH 03282
USA

response seen on the screen has now become quite specific: "It has a blue 2+ cation". This strongly suggests the correct element, copper.

The game is as challenging as the player wants to make it. Because of the interaction with the computer, via wrong guesses to obtain information, a perfect score is practically impossible—and there has never been one. A simpler version, called the ***Nomenclature Game,*** supplies a name for each compound when the unknown formula is presented. It is somewhat easier, and perfect scores are quite possible.

The elegant variable structure of TenCORE allowed me to code the formulas as strings of eight one-byte integers, each embedded in an eight-byte integer, for efficient management. It was a straightforward job to write an editor which allows a teacher to revise the list of formulas and names in the game datasets, and to create special datasets for individual classes or students.

"Because of the interaction with the computer, via wrong guesses to obtain information, a perfect score is practically impossible—"

Another feature is the facility to call up windows containing information about chemical elements, as shown in Figure 2. However, if used in the game, the student's score will not count in the hall of fame, containing the ten highest scores.

This is an ideal game for introducing chemistry, since the fundamentals are usually dull and often badly taught. The games help put this essential material in an interesting environment.

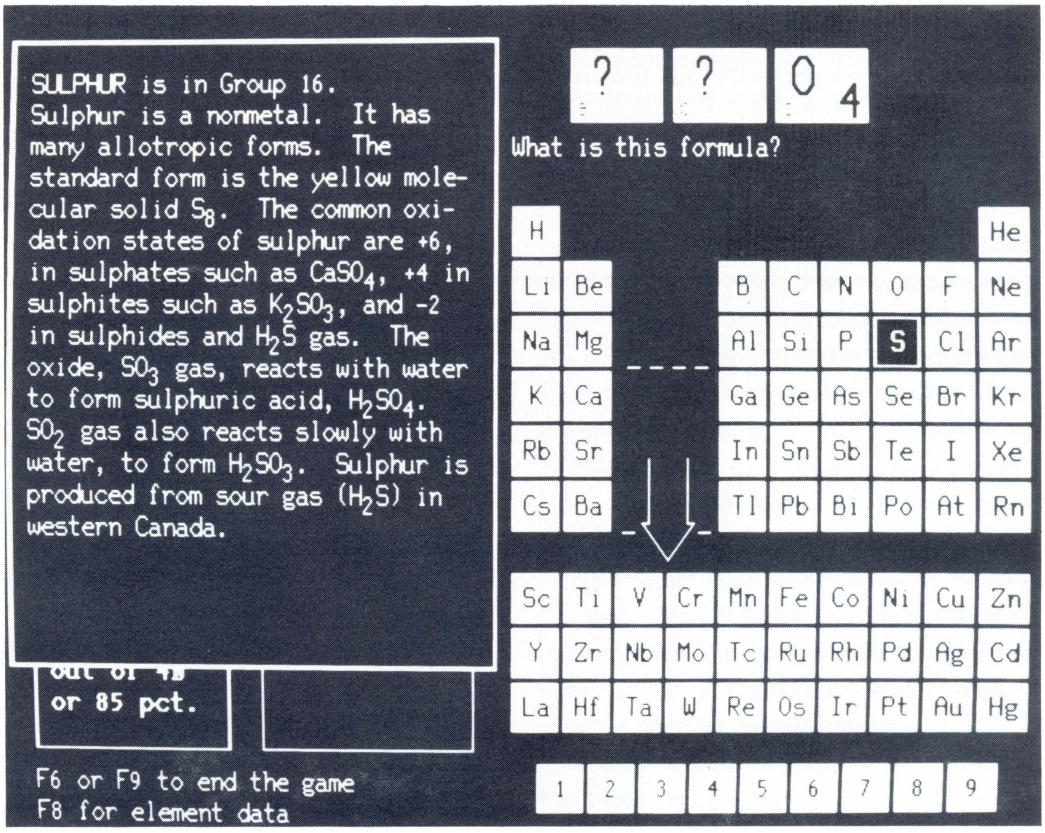

SULPHUR is in Group 16.
Sulphur is a nonmetal. It has many allotropic forms. The standard form is the yellow molecular solid S_8. The common oxidation states of sulphur are +6, in sulphates such as $CaSO_4$, +4 in sulphites such as K_2SO_3, and -2 in sulphides and H_2S gas. The oxide, SO_3 gas, reacts with water to form sulphuric acid, H_2SO_4. SO_2 gas also reacts slowly with water, to form H_2SO_3. Sulphur is produced from sour gas (H_2S) in western Canada.
or 85 pct.
F6 or F9 to end the game
F8 for element data
? ? O 4
What is this formula?
H He
Li Be B C N O F Ne
Na Mg Al Si P S Cl Ar
K Ca Ga Ge As Se Br Kr
Rb Sr In Sn Sb Te I Xe
Cs Ba Tl Pb Bi Po At Rn
Sc Ti V Cr Mn Fe Co Ni Cu Zn
Y Zr Nb Mo Tc Ru Rh Pd Ag Cd
La Hf Ta W Re Os Ir Pt Au Hg
1 2 3 4 5 6 7 8 9

Figure 2

TenCORE Helps ITC's *ACTIV* Courseware Stay on Top

by Dr. Barry Steven Cohen
Customer Assurance Manager
Industrial Training Corporation

For more information about the *Activ* library, contact:

Industrial Training Corporation
13515 Dulles Technology Dr.
Herndon, VA
22071-3416
USA

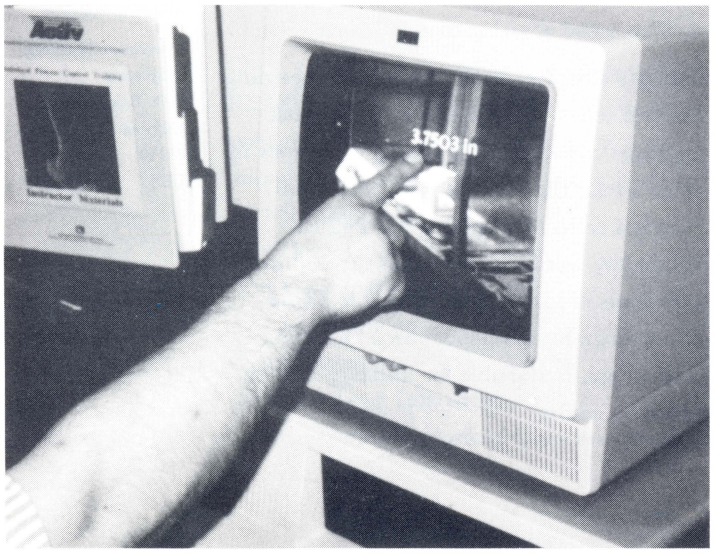
ITC, the largest full service training company serving the craft skills workforce, offers the ***Activ*** library of interactive video disc courseware. The library contains nearly 100 lessons with more than 15 different maintenance topics, ranging from air compressor repair to applied industrial mathematics. All lessons, delivery software and administration software are implemented using the TenCORE Language Authoring System.

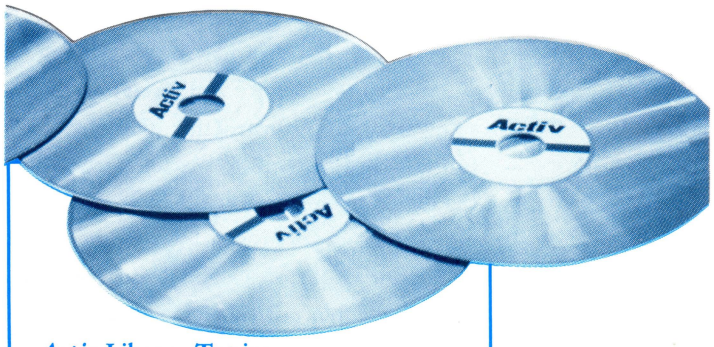
Activ software, including TenCORE executors and drivers, and the lesson library fit well within 10 megabytes of disk storage. Even the most complex features, such as the data processing capabilities of the administration software, run at surprisingly high rates of speed.

Activ courseware operates on IBM InfoWindow and Visage interactive video disc systems, and will soon run on a number of others. Customers may configure the ***Activ*** software, according to the usage conditions—stand-alone, student diskette or local area network. Database files can be enlarged to accommodate simultaneous enrollment of more than 5000 students.

Activ Administration Software was designed to provide easy and useful management of the CBT process. For example, student data can be transferred from various fixed drives and diskettes in order to update records on an administrative workstation, make student diskettes and periodically archive data. Also, progress reports can be generated, with information specific to the student, training program or data source.

The *Activ* library contains interactive video disc courseware for industrial skills training. ▼





Activ Library Topics

Air Compressor Repair
Applied Industrial Mathematics
Centrifugal Pump Repair
Electrical/Electronic Skills
Electrical/Electronic Theory
Hand Tools and Measuring Instruments
Modicon 984 Basic Training
Pipefitting
Respiratory Protection
Rigging and Lifting
Rotating Equipment, Predictive Maintenance and Alignment
Statistical Process Control
Valve Repair

ITC also uses TenCORE to produce custom programs for major clients in any topic.

LITERACY, PERHAPS THE GREATEST CHALLENGE OF THE 1990s

by Stan Bolin
President
Intechnica Learning Systems

Language literacy stands as the single largest worldwide communications issue. Internationally, English is the most taught language in the world, with formal training programs in more than 57 countries. In fact, 250,000,000 Chinese are currently studying English (more than the entire U.S. population).

Designing a Solution. Naturally, the best solution to the English literacy challenge rests with the public education of our children. However, current needs in the U.S. and abroad indicate that an urgency exists for training of late-teens and adults who are entering the work force and receiving complex technical instruction. Therefore, Intechnica Learning Systems concentrated on the development of adult-oriented materials, rather than restructuring children's materials.

For our English instruction program we utilized the four critical elements in human communication: listening, speaking, reading and writing. Since speaking and listening are related to sound, our program required sound quality, while keeping file size and directory entries within manageable limits. Since many of our intended audience had minimal reading skills, but considerable life experience, graphics was essential.

Specific Tools. The VoxCard sound digitizer was selected for its compatibility with PC/XT/AT bus machines, frequency capabilities and flexible port addressing. Supporting software was designed for efficient production and handling of many small voice files.

IBM's Extended Graphics Adaptor (EGA), was selected for its middle of the road workstation cost and the availability of support tools. We chose PC Paintbrush by ZSoft as the graphic design software and TenCORE as the language authoring system. We found TenCORE had many of the features we would have otherwise been required to develop. We designed a special VoxCard driver for use with the TenCORE language, making interactive program development relatively simple for others with similar needs.

Our goal of providing a turnkey solution of delivering simultaneous instruction to a large number of students caused us to look at cost-efficient multi-user techniques. The process we selected for application development was time division CD-ROM multiplexing. In our VoxPlex multiplexer, a state machine determines which user, out of a possible eight, will be served next through a sequential ring counter. Worst case latency time in VoxPlex is 10 milliseconds, which is relatively small. The MS-DOS extension compatible driver allows each user to access CD-ROM as if he were alone on the system.

Today's Results. Today, Intechnica Learning Systems offers ***Speak English,*** a bilingual language curriculum containing 79 lessons in three levels. Each level offers about 1500 exercises each. More than 1300 English vocabulary words are taught in the 400 to 600 hours of instruction. Also, the ***I Can Read*** program, developed using this same technology, is available for illiterate English speaking adults.

For more informati
about the literacy
program, contact:

Intechnica Learnin
Systems
P.O. Box 30877
Midwest City, OK
73110
USA

THE *READY COURSE:*
A Reading Comprehension Program with Digitized Audio

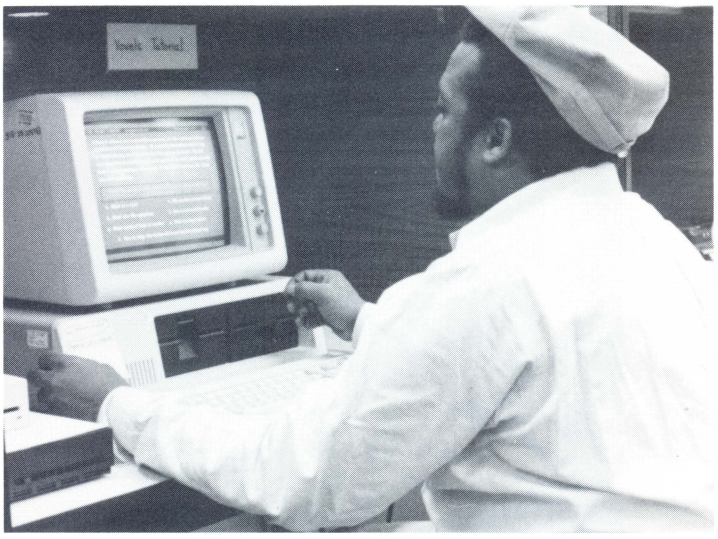
by Tim Songer and Chuck Barger
Central Piedmont Community College

Introduction. In 1985, Central Piedmont Community College (CPCC) began a three year grant from Funds for the Improvement of Post Secondary Education to develop and evaluate reading courseware for adults functioning between the fourth and eighth grade level. Two products have been completed during the grant period: The ***Learning Style Survey*** and the ***READY Course.*** The ***Learning Style Survey*** is an interactive video disc designed to assess the preferred learning styles of low-literate adults. This program has been validated during a national field test conducted in 1987 and is currently being marketed by Synergistic Educational Technology Systems (SETS).

The ***READY Course*** was developed after initial results from the national validation of the ***Learning Style Survey*** showed a strong preference among a majority of adults reading below the eighth grade level for auditory based instruction. The ***READY Course*** (originally designed by Dr. Tom Duffy of Indiana University) has been produced at CPCC using the TenCORE authoring language for delivery on IBM compatible computers. Working from Duffy's original design, a software "template" was created by Chuck Barger. This template is being used at CPCC to develop several new modules of the ***READY Course.*** Each module provides an average of five hours of instruction in seven important reading comprehension skill areas:

- Setting goals
- Organizing
- Vocabulary Development
- Summarizing
- Scanning
- First Level Inferences
- Answering Important Questions about the Text

Unique Features. Each module of the ***READY Course*** uses four paragraphs of text on a topic of interest to adults. Topics range from health related issues such as "Saving Money with Generic Drugs" to general interest topics like "Buying a Used Car". The four paragraphs introduced in each module create the context for all the exercises in that module. The exercises address each of the reading comprehension skill areas listed above. The content remains constant so the student can concentrate on practicing the process skills without being presented with new content as well.



The student controls the pace of the instruction as well as the amount of help required to understand the text. ▼

The exercises within the ***READY Course*** use the mouse almost exclusively as the input device. The first exercise of the module introduces new students to the mouse. The mouse allows students to manipulate text on the screen in a variety of ways. The exercises are designed to give the student opportunities to choose answers to a series of complex questions without typing words, letters or numbers into the computer. The mouse also allows the student to quickly access the definition and pronunciation of difficult vocabulary words from each of the paragraphs. Because of the mouse, the

INTERNATIONAL OUTLOOK

COURSEWARE AT WORK
Teaching Computer Technology Through the Computer

by Niall Watts
Managing Director
Courseware Ireland, Ltd.

Courseware Ireland has marketed TenCORE products since July of 1985.

IRELAND - Some years ago a Swiss bank needing to educate its staff in data processing turned to the CBT specialists of Courseware Europe. They were able to teach computer technology through computers themselves. The medium was united with the message to give the course.

The Swiss bankers were pleased, as were their colleagues in other countries who used the course. The course was translated into several languages and played a significant role in introducing new technology to Europe's banking and financial community.

Due to the rapid pace of technological change—particularly the advent of personal computing—and continuing demand from the banking and industrial world, Courseware Ireland (a subsidiary of Courseware Europe) decided to create an entirely new course - more extensive in its contents and scope, and with a wider target audience and subject matter. That course is ***Computers at Work,*** which provides fifteen hours of courseware, written in TenCORE, covering all aspects of information technology.

Computing Concepts. The philosophy behind ***Computers at Work*** is one of learning computing concepts. For example, the learner does not find out how to use a particular spreadsheet program, rather the student learns what a spreadsheet is and how one could be used in an organization. As part of the learning process the student has an opportunity to manipulate data in a simulation of a "typical" spreadsheet program. Of course, much more than this is covered.

▲ "The idea of processing is illustrated by comparing data processing with film and food processing."

The course starts by comparing the daily routine of a secretary in an old-fashioned office and a secretary in a modern office. They both have the same jobs to do, but the modern secretary is more efficient as her office is fully automated. A similar comparison is made between managers.

The course then gets down to the nuts and bolts of computing. Computer hardware is described in detail with topics on disks, printers and memory. The idea of processing is illustrated by comparing data processing with film and food processing.

SuperCalc 5 Courseware

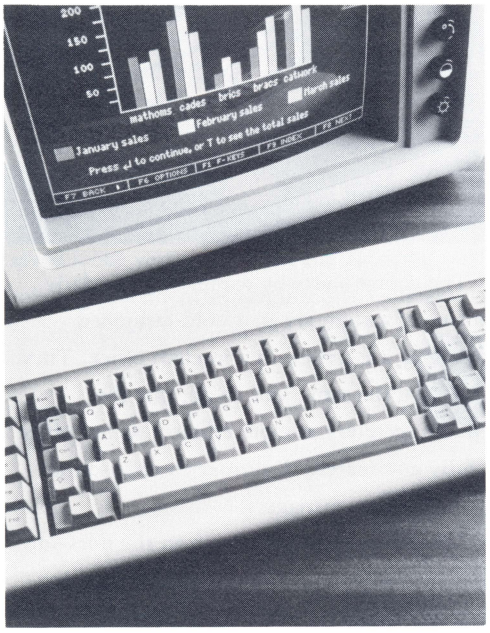
Courseware Ireland recently extended its "at Work" series to include ***SuperCalc at Work,*** a CBT course for users of the SuperCalc spreadsheet. The four hour course places emphasis on the recently released SuperCalc 5. Subjects covered range from using menus to the creation of macros and include the GRAPHICS and PRINT options. Courseware Ireland is the first company worldwide to release courseware which is fully compatible with the new SuperCalc version.

The organization has already released ***Lotus at Work*** which was recognized by the Lotus Development Corporation with the appointment of Courseware Ireland as authorized consultants with a special interest in CBT.

From hardware there is a natural progression to software. Topics such as binary code, programming languages, operating systems, assembly code and fourth generation languages are discussed in detail. ***Computers at Work*** then provides the student with a chance to use simulations of typical PC applications—word processing, database, spreadsheet, project planning, graphics and networking. Networking leads to a consideration of larger computers and the issues involved in mini and mainframe computing.

It concludes with an examination of the role of the computer in society and an explanation of how software is developed.

Features Designed with Students in Mind. ***Computers at Work*** is modular in structure. Learners can move freely between the lessons or choose to be tested. The test results are private and do not control progress through the course.



Computers at Work then provides the student with a chance to use simulations of typical examples of all the popular PC applications–word processing, database, spreadsheet, project planning, graphics and networking.

Learners can consult a glossary of computing terms or check their progress records. They can bookmark their position and return later. Instructor Options exist to monitor the learner's progress through the course.

Computers at Work has been translated into mo major European languages–and even into Irish Gaelic!

Recognized Achievement. The National Software Centre of Ireland awarded ***Computers at Work*** with the Quality Assurance Seal. It was the only course on a non-financial subject to win an award for excellence from the International Federation for Computer-based Education in Banking (IFCEB).

For more infor about *Compute Work*, contact:

Courseware Ire 14, Upper Fitz Dublin, 2 Ireland

Translatable Success Throughout Europe. ***Computers at Work*** has been translated into most major European languages–and even into Irish Gaelic! It has enjoyed remarkable acceptance throughout Europe with sales now approaching 10,000 copies. Several organizations have taken out corporate licenses. Despite its success in Europe, ***Computers at Work*** has yet to cross the Atlantic.

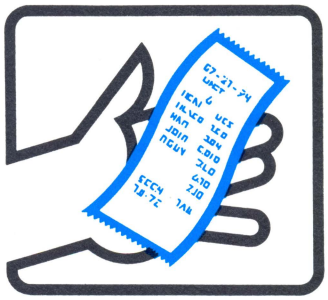
Originally released in 1986, the course is now being updated to reflect recent developments such as desk top publishing and information management.

ICL, Interactive Learning Systems and CBT Support

These articles were provided by the Interactive Learning Systems organization of International Computers Limited (ICL). ICL, the information subsidiary of the STC Group, employs over 20,000 personnel in more than 70 countries with annual earnings approximating US$3 billion. ICL's Interactive Learning Systems organization for interactive computer-based training has marketed TenCORE products in the U.K. since May of 1987.

CBT Developed for U.K. Retail Industry

UNITED KINGDOM - A new CBT package, developed by ICL Interactive Learning Systems, has been designed specifically for the United Kingdom retail industry. ***Training in Store*** consists of ten modules, with 25 hours of instruction covering all aspects of basic stock handling and control, as well as customer service, hygiene and tidiness.



Supported by the U.K. governmental Manpower Service Commission, now known as the Training Agency, ***Training in Store*** is part of a national initiative aimed at improving staff performance throughout the retail industry. The package conforms to the latest national retail training standards established by a joint steering committee comprised of Commission members and U.K. retailers.

According to ICL Interactive Learning Systems Generic Products Marketing Manager Tony Lee, ***Training in Store*** responds to several of the retail industry's staff problems, including high turnovers, personnel shortages, significant numbers of part-time workers, and workers re-entering the work force after many years.

Lee said, ***Training in Store*** addresses some of these problems by improving training productivity through delivery of consistent messages and allowing students to conveniently learn at their own pace."

"The package not only allows students to participate actively in the learning process, but also provides immediate feedback to management. This enables management to monitor staff progress, ensuring all employees reach the same proficiency level."

Currently, more than 90% of all ***Training in Store*** students have mastered the modules quickly and with high pass rates. "More importantly," added Lee, "they appear to have enjoyed the experience!"

The package was produced using TenCORE and runs on ICL workstations or other IBM compatible PCs.

SSEB Implements Major Automation in Retail Operations

SCOTLAND - The South of Scotland Electricity Board (SSEB) recently implemented a major shop automation process, which included the installation of ICL DRS computer systems to provide a sales support system, and to control electronic point of sale terminals and printing operations.

SSEB, which introduced the systems in support of its retailing business, is one of the largest suppliers of electrical appliances and services in Scotland, with 74 shops.

Even though the Board's shop staff were recognized professionals in their field, they had limited knowledge of computing and the use of computer terminals. Therefore, it became necessary to identify and implement a training solution that would not only provide personnel with a working knowledge of newly introduced computer applications, but also offer a guide whenever the systems were running.

After evaluating the training needs, ICL Interactive Learning Systems recommended development of a TenCORE based solution which would both introduce the system keyboard and train SSEB's staff on initial appliance sales systems. The training solution

has been developed and delivered and is used along with an associated courseware management system. Positive response by SSEB shop staff to this training method proved to be an encouraging feature of the joint SSEB/ICL training package.

HBIS Used by Local U.K. Government Authorities

UNITED KINGDOM - In 1988, ICL launched the Housing Benefit Information System (HBIS) in the local government marketplace of the United Kingdom. HBIS was designed specifically for Local Authority Housing Benefit departments responsible for the administration of public housing procedures and systems. HBIS is a mainframe based application which drives a mixture of ICL C-DOS based terminals.

Since the HBIS potential market includes more than 100 locations with local user populations ranging from four to 600, ICL was faced with an interesting training challenge. Complicating this challenge was the wide range in student age and academic level, and constantly changing personnel.

ICL's Interactive Learning Systems organization addressed this need by developing a four module training package using a unique C-DOS version of TenCORE. Now all purchasers of the HBIS application receive copies of the CBT program as a part of the ICL total solution.

CBT NEWS FROM PHILIPS
INTRO TO PCS - A NEW STANDARD TO PC TUTORIALS

This article was provided with the assistance of Systems Interactive of the U.K. Systems Interactive has marketed TenCORE products since September of 1987. Systems Interactive provides a full range of services for courseware design and project implementation.

THE NETHERLANDS - ***INTRO to PCs*** is an interactive computer-based training program developed in TenCORE, to introduce beginners to the many aspects involved in using a PC.

The course lasts for about 15 hours and can be followed without expert assistance or books. No prior knowledge of computers is required for this course. ***INTRO to PCs*** contains many illustrations which make the course attractive to everyone.

It consists of nine modules, preceded by an introduction in which the beginner learns how to use the course and is offered the possibility of doing a keyboard exercise. In module two, "Introduction to Automation", the basic principles of automation are explained in a clear, concise way. The module "Equipment" discusses the operation of data storage and the possibilities for expanding the PCs functions. After the general explanation of software, the "Programming" module deals with the principles of programming on a basis of simple examples. A very elementary programming language developed for this purpose is used in the course.

The DOS control system, in so far as it is relevant for a beginner, is explained in the DOS module. Applications on the PC, such

INTRO to PC
available in D
English, Gern
French, Span
Italian, Portu
Swedish and

as word processing, card file, calculation facilities, graphs and communication with computers are each explained in a detailed module.

Every module contains clear exercises and/or a test in which the student can check what was learned. The course keeps a record of the parts that the student has gone through. The package can be used as a "personal reference".

The installation of the software is often a problem for beginners learning to use the PC. The installation procedure for ***INTRO to PCs*** calls for no expertise whatsoever on the part of the user. A "yes" or "no" answer to a few questions is all that is required.

INTRO to PCs can run on any CGA equipped PC running DOS with a minimum memory of 512kB. The package comes complete with a short manual.

Apart from the fact that ***INTRO to PCs*** is a most enjoyable and convenient way to get acquainted with the PC, it can also be used as a "personal reference" aid, meaning the user has direct access at any time to many of the basic concepts required in a computer environment. The repetitive structure of the course results in knowledge being maintained at an acceptable level of quality.

For more information about *INTRO to PCs* or the TOOLS group, contact:

Nederlandse Philips Bedrijven BV
TOOLS
Building HKB-1
P.O. Box 218
5600 MD Eindhoven
The Netherlands
31-(0)40-734475.

The Tools Group

In a modern high-tech company like Philips, training is assuming ever-increasing importance.

Training is regarded as a tool of management which enables human resources to be used to optimum effect. It is of the utmost importance for training courses to take place quickly and efficiently. Technical aids can play an important role here.

For these reasons, a project group called TOOLS was set up in mid-1987 in De Nederlandse Philips Bedrijven as a staff department of Personnel and Labour Relations/ Education and Training.

TOOLS stands for Technology Oriented Open Learning Systems. The group's task is to give form and content to technology supported training in the Philips organization.

But TOOLS also co-operates with, or on behalf of, other companies on introducing and using technology supported learning systems which are also useful for Philips in the field of internal training.

TOOLS develops and sells the educational software with which the open learning systems described above take shape. The group organizes training courses and is a center of knowledge in the field of training with the aid of modern technologies.

Abbey National Reports Fast and Effective Growth with CBT Efforts

by Julian Wakeley
Manager
Computer-Based Training
Abbey National

UNITED KINGDOM - The Abbey National is one of the U.K.'s premier financial institutions, with assets exceeding $55 billion and eight million account holders. The organization has 675 branches throughout the British Isles with over 12,000 staff. The diversity of operations means that a wide range of skills are required, from customer relations, management to technical and procedural skills. In order to support our services, Abbey National has become one of the United Kingdom's leading users of technology.

Back in 1985 it was correctly envisaged that proposed changes in legislation for 1987 and in 1988 would involve many

amendments to our operations. Staff, therefore, needed to be made aware of the new procedures over a relatively short period of time.

Much had been made in the financial and computer press of the impact of computer-based training on industry and finance. So we decided that a pilot study was necessary to see if it could work in our organizational culture. This was successful. CBT on a PC rather than a networked terminal approach was found to be preferable (technology being what it was in 1986) and certainly better than continuing with tutor-led courses. A full scale, three year implementation plan was drawn up for introducing a dedicated CBT system into each branch, in the form of an IBM compatible micro, which at the beginning of 1987 amounted to 675 units.

Our development focus was (and still is) on procedural and new product training. Recently we have developed emulation programs using TenCORE, which we are particularly pleased with. These train the staff on using an insurance quotation system without the need to go "on-line" all the time for training.

We have produced over 35 courses during the past 18 months, with current plans to increase this capability to 40 titles per annum from this year. This isn't just different modules of the same course, but individually researched pieces of training. Furthermore, there is not just one copy of each course, but between 450 and 800 copies of each at present, depending on the target machines. On average we will ship in excess of 1500 disks per month to our branch sites. We receive feedback on each of the courses and this is analyzed carefully by the in-house team of designers.

In terms of finding how the students are performing there is also a student management system on each of the machines (a derivative of the manage/router TenCORE programs) which enables us to retrieve results and course data remotely. The data are transferred to a Lotus 1.2.3 spreadsheet for management reporting purposes. By 1990 we will have over 1400 PC-based terminals available for CBT, the majority of which will be networked. All of this requires a highly trained group of people within the company, growing from two individuals in 1985 to the present number of 14 plus external developers.

We looked at many different authoring systems, before and after the pilot - we still review them now. As yet, we have not found anything to match TenCORE in terms of support and large user base (big companies are gregarious when it comes to software). Another important consideration for us was the relatively large number of independent consultant CBT designers (or companies) who could use TenCORE. It must have the largest penetration in that forum, which is always a factor to bear in mind as you are growing your own internal team. Most of the others relied on the originator of the system or a few "stalwarts" - with the amount we have invested in the medium, this was not a good message.

FUNLINE

German PTT Telecommunications Training

by Franz Steimer
Telecommunications Engineering Center
Training Division

This article was provided with the assistance of Teach Tech Teachware Technology. Teach Tech has marketed TenCORE products since March of 1985.

WEST GERMANY - As the only supplier of telecommunications in West Germany, PTT has a special commitment to the future economic and technical development of German communications services. In fact, with more than 500,000 employees and a 1988 training budget of DMK 1.8 billion, PTT is recognized as the largest "firm" in West Germany.

Over the last few years, it became very clear that the training needs created by quickly expanding telecommunications services could not be satisfied with conventional methods. One way PTT identified as a means to cope with this problem was through the use of CBT, which is incorporated into our ***FUNLINE*** System.

After studying hardware options and various configurations, the results indicated that a network of standard PCs was best suited for PTT's needs. Today, more than 2500 PCs have been installed just for telecommunications training.

The PCs used are the same as those utilized in the field and at PTT offices. Therefore, training can be delivered directly to the user's desk. By the end of 1989, all 2500 "training only" PCs will be connected to local area networks. These local networks will in turn be connected to a nationwide network. Courseware will automatically be distributed and updated throughout the country. Usage data will be centrally stored and analyzed. With the development of the ***FUNLINE*** System, the German PTT will be the largest network dedicated to training in Europe.

FUNLINE courseware is exclusively written in TenCORE. After testing and studying pilot projects using other language authoring systems, TenCORE was selected based on what we considered a cost-effective comparison.

Some of the major considerations were:

✔ High quality courseware was required. Limitations regarding the possibilities of the media were not acceptable. Complex situations required simulation. The effectiveness of low-quality courseware had been determined to be very low.

✔ The authoring system had to allow for production of high quality courseware at a reasonable cost. Testing had to be timely and effective. Existing staff needed to use the authoring system.

✔ The authoring system had to allow for modular lessons, with the ability to restructure existing courseware and easily add new material.

✔ The authoring system had to permit construction of complex development tools and student tools, to further individualize the training process.

✔ The program required a stable, "bug free", authoring system which could be updated regularly. The system should be well represented in the market and evolve with future changes in the PC hardware and software world.

These requirements have been fully met by TenCORE. In the near future, the possibilities of the upcoming TenCORE Producer will also be analyzed and tested. We are already optimistic about the potential of sharing development tasks between the TenCORE authoring teams.

For more information about *FUNLINE*, contact:

FTZ
Mr. Ihm
L-4
Am Kavalleriesand
D-6100 Darmstadt
West Germany

TALENT AND TENCORE - A MARRIAGE OF CONVENIENCE

by Patrick Friesner
Chief Executive
Interactive
Information Systems

UNITED KINGDOM - The term "a marriage of convenience" is normally denigratory. This is not the case here. I use the phrase literally and positively because it accurately describes our relationship with TenCORE. Let me tell you how and why.

Background to the *TALENT* System.

Interactive Information Systems Ltd (IIS) was founded five years ago. The company's rationale is very simple. IIS believed that the cost benefits of interactive video would enable the medium to grab a growing percentage of commercial and industrial training budgets. IIS also believed that the benefits would initially be appreciated by smaller organizations. Production costs would however rule out in-house production. The only way for smaller organizations to use interactive video would be through off-the-shelf packages.

IIS was set up to create a library of interactive video training courses, modular in concept, consistent in style and quality and aimed at a worldwide market.

Growing Pains. It's one thing to possess a global vision, another to translate it into reality. We started with four employees in a small London office. At that time there were not only no hardware standards, there was no hardware!

It took us about two years to set up a structure capable of producing courses and about another six months to produce our first two titles, "Make the Telephone Work for You" and "Make the Telephone Sell for You".

We were not only creating the courses but choosing the tools with which to do so. Since we proposed to produce an on-going series of courses, we were conscious of the need for productivity. We therefore selected an authoring system that met our immediate needs.

The word "immediate" is important. As production got under way we began to go up our own learning curve. Hardware developments were also taking place in parallel with our own progress. Enquiries began to come in from all over the world, though how they found out about us we'll never know!

▲ "Start Your Own Business":

This *TALENT* course from IIS is designed to help anyone who is interested in setting up a small business. The course includes interviews with real entrepreneurs, a quiz to assess qualities and two case studies.

The Paradise of Standardization.

With a rapidly growing customer base in England and overseas, the pressure to standardize in a number of areas - software and hardware - steadily increased. We imposed our own internal standards as far as we could. Happily they seemed to coincide with emerging international standards, to which we made our own contribution.

We specified an AT workstation with a 20 MB hard disk. We moved from CGA to an EGA standard, however, we also decided that *TALENT* courses would have to run on a number of different interactive video boards: MIC, VAL, Cameron, Visage, InfoWindow and Sony View for starters.

This led us to look for an authoring language that best met our needs. I hope CTC will not object if I say that none of them are perfect, however we evaluated all that were commercially available and came to the conclusion that TenCORE suited us best. One of its major attractions is its flexibility.

We found the alternatives were too structured and would restrain our ability to evolve our approach to courseware design.

TenCORE's video commands freed us from the requirement to provide board-specific software and this has enabled us to economically address all the systems mentioned above.

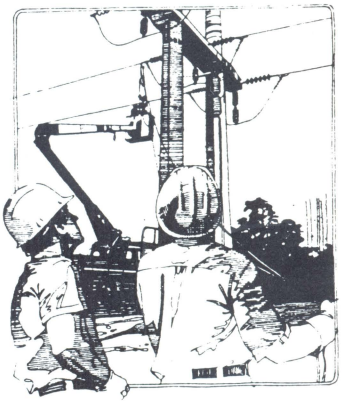
As IIS's activities expand internationally, with the production of ***TALENT*** courses in England, the US, France, Germany and Holland, compatibility becomes paramount. So I return to where I started - ***TALENT*** and TenCORE is a true marriage of convenience - for us and our customers, wherever they are located.

This marriage also extends to the two companies. IIS and CTC work well together to solve the inevitable problems that occur in a dynamic business like ours. IIS is fully conscious of its obligations to its customers and appreciates CTC's ability to respond so our problems are not passed on to our users.

For more information about *TALENT* courses, contact:

IIS
24 Ray St.
London EC1R 3DJ
United Kingdom

Afora's CEPS Systems Provide Simulation Enhanced CBT



FINLAND - Afora Ltd., a division of Combustion Engineering, offers simulation enhanced computer-based training for power-related instruction.

Afora's Combustion Engineering Personal Simulator ***(CEPS)*** Training Systems were developed for educational institutes, utilities and industrial operations, where full scale simulation is not economically viable.

CEPS consists of basic principles and part-task level training for fossil power plant operators (***CEPS***-POWER PLANT), electric network operators (***CEPS***-ELNET), and control engineering students (***CEPS***-CONTROL).

Each ***CEPS*** package is organized into predefined lessons with specific learning objectives. Typical training topics include introduction to process dynamics, start-up and shut-down procedures, optimizing process efficiency and operating procedures during disturbances. ***CEPS*** relies heavily on the effective combination of diagrams, text and tables. Lessons are followed by simulation exercises.

According to Timo Ahman, Afora Ltd. Energy Division product manager, "During the simulation, situation dependent guidance and feedback are supplied to the students, based upon their actions. It is possible, at any time, to interrupt, restart or return to a previous situation."

Ahman added, "Besides the standard packages, which can be tailored to the needs of individual customers, ***CEPS*** training systems can be built for special applications by utilizing existing CBT and simulation software.

In fact, the recently opened Finish Science Center will demonstrate nuclear power and paper making with specially created ***CEPS*** systems."

Users of ***CEPS*** systems include several paper mills and electric power companies in Finland. Combustion Engineering is currently starting to market ***CEPS*** in other countries.

The TenCORE Language Authoring System was used in the development of the ***CEPS*** tutoring software and courseware. The simulation software was written in FORTRAN 77.

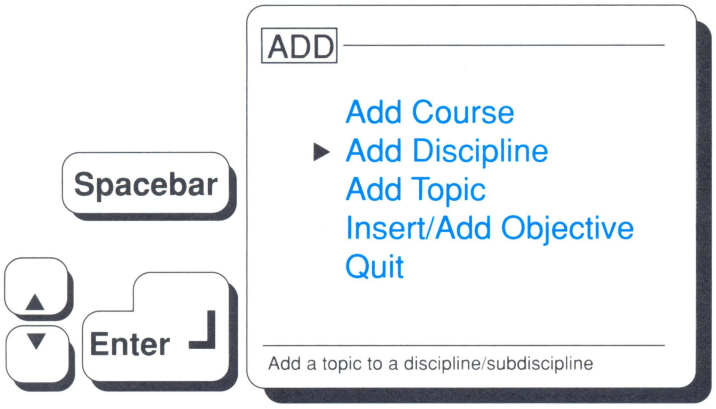
For more information about *CEPS*, contact:

Combustion Engineering
Afora Oy
Hiomotie 5
P.O. Box 94
SF - 00381 Helsinki
Finland

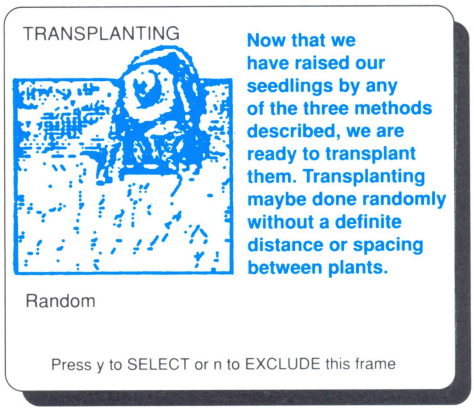
The *Knowledge Generator* Provides a Channel for Agricultural Technology Transfer

PHILIPPINES - Agri-climatic regions of the world vary with differences in pests, soil types, climates and the ability to support certain crops. These environmental influences, when combined with cultural preferences, economic limitations and educational levels, offer some of the more unique challenges in the area of technology transfer, particularly in developing countries.

Agriculturists at the International Rice Research Institute (IRRI) in Los Baños, Philippines have developed a tool, the ***Knowledge Generator,*** for aiding rice science technology transfer. The ***Knowledge Generator*** was developed by the IRRI Training and Technology Transfer Department with the assistance of the International Development Research Center of Canada and the Hewlett Packard Corporation.



Customizing Information. According to Senior Research Assistant E.V. Tipa, Training Assistant J.G. Flor and Training Specialist D.R. Minnick of the IRRI Training and Technology Transfer Department, courseware is developed in four alternative media: print-on-paper, slide-tape modules, video and interactive computer assisted instruction.


TRANSPLANTING
Now that we have raised our seedlings by any of the three methods described, we are ready to transplant them. Transplanting maybe done randomly without a definite distance or spacing between plants.
Random
Press y to SELECT or n to EXCLUDE this frame

◄ Graphics images are combined with text by following a prescribed feature for naming graphic files.

The ***Knowledge Generator,*** produced with the TenCORE Language Authoring System, is a complete courseware package designed to customize information to individual needs. For example, if a trainer wants to introduce improved methods of controlling pests in rice fields of Mexico, the pest management portion of the ***Knowledge Generator*** can be modified so information is region specific. Because conditions vary between other rice producing areas and Mexico, information must be directed to the appropriate environment, society and cultural conditions.

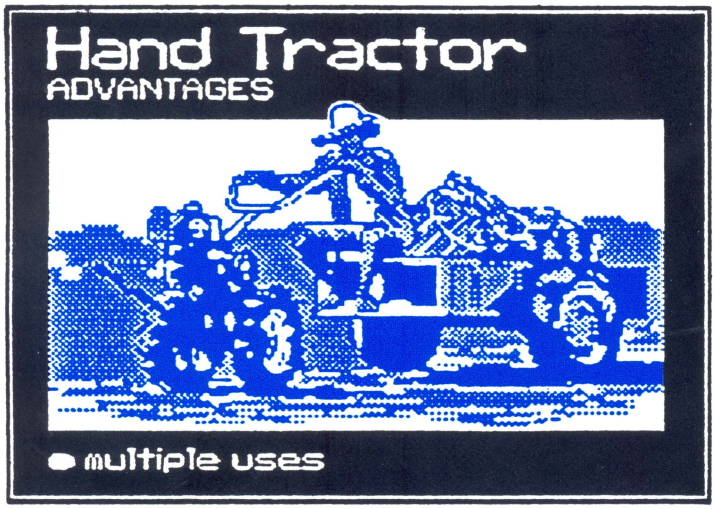
Developers noted a number of training considerations affecting successful information transfer. These included:

- overcoming language barriers
- methods of capturing, documenting and updating information
- adapting to local populations
- using self-learning methodologies
- transferring training programs from one area to another.

Knowledge Generator developers feel they have met these challenges by integrating educational technologies of performance objectives and sequential programmed instruction into a database, using a microcomputer.

Designing for Change. Each training information base can be readily previewed, added to, deleted from or modified by the courseware developer or trainer. The ***Knowledge Generator*** is actually a software shell that helps to easily and expeditiously create, store and retrieve courseware.

The shell works on a serial menu format containing courses, disciplines, topic objectives and content frames. The shell design permits the development of information frames in a short time, even by those with little or no programming experience. The size of the shell varies according to the needs of the particular institution and the training program. Information can be added to the rice science information base at any level of the course.



Easing the Development Process. By using the shell as a tool, the burden of developing content frames is changed to a convenient task of typing and formatting text for screen display. A graphics image is easily combined with the text by following a prescribed feature for naming graphic files.

The ***Knowledge Generator*** shell delivers frames that are entirely in the graphics mode. Displays are suited for the CGA medium resolution graphics screen. Both the line:character and fine grid systems are used. The shell consists of 12 utility blocks, performing the various operations required for courseware use, and 14 text blocks, accommodating the text information supplied by the courseware developer.

As a database of knowledge coded as text and graphics images, these integrated frames act as a source of content frames. Topic objectives, stored as a component of the database, are chosen from the menu. The selected objectives identify, access and then display the integrated frames that satisfy the objective.

Currently, a catalog of interactive frames, containing questions and feedback, developed earlier using another authoring system, is being translated into TenCORE.

IRRI plans to include TenCORE as a major component of an interactive video system for psychomotor skills training and expert systems.

For more information about the ***Knowledge Generator***, contact:

IRRI
Box 933
Manila
Philippines

Now in Three Part Harmony

TenCORE®

Authoring Products

Solo or in concert, TenCORE's® trio of authoring products are the right instruments for developing your CBT classics. Together they meet the diverse needs of first time authors, instructors, and advanced CBT developers. Stand-alone or networked, TenCORE authoring tools perform on the IBM family of PCs along with the leading interactive video systems.

TenCORE Producer

Compose quickly with this easily mastered authoring system. Pull down menus and icons let you visually lay out displays, combine them with questions or menus, and immediately have a working lesson. A noteworthy and upward compatible addition to the TenCORE family of authoring tools.

TenCORE Computer Managed Instruction

Concentrate on conducting the show and spend less time scoring with the TenCORE CMI mastery-based testing and record keeping system. It offers fully prompted question editing and administrative options. Student records can be transferred to standard database packages.

TenCORE Language Authoring System

Even the most discriminating authors rave about its power and flexibility. Prompted display editors combine with a powerful command structure giving you maximum control to confidently implement any instructional design. The choice of professional CBT developers around the world.

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